

interconnection. The requirement for mutual compensation has not reduced the monopoly power at all.

This case illustrates the problem with relying only on a structural solution such as mutual compensation without control of the actual rates paid. Consider, for example, the case of a local exchange company interconnecting with a wireless services provider. Assume that the local exchange company is the only service provider for some customers but that the wireless service can be provided on a competitive basis. If the local exchange company has a wireless affiliate, it can maximize the total profits of its enterprise by setting a high mutual compensation rate. Payments to the local exchange company from the wireless companies are an internal transfer for the affiliated company but a real cost for the unaffiliated company. So long as the competitive wireless companies send more traffic to the local exchange company than they receive from it (as is generally the case), then a high mutual compensation rate disadvantages the non-affiliated carriers and could make it impossible for them to compete with the affiliated carrier. Thus if the monopolist of part of the market is not restricted in its ability to enter potentially competitive sectors of the market, mutual compensation without control of rates fails to provide the consumer benefits of competition.

C. Mutual Compensation at Cost

In this case, each party must compensate the other at identical rates, but the rates are limited to the actual cost of providing terminating service. Using the model developed above, the compensation rate for termination service in this case would be \$.50 per call.

The competitors of B will provide BB traffic at the competitive price of \$1.00. They will also provide BA traffic at the competitive price of \$1.00, composed of \$.50 incurred as their own cost for originating traffic and \$.50 incurred as an access payment for terminating traffic. The monopolized customers of A will pay the monopoly price of \$2.00 per call for AA traffic and will pay the monopoly price of \$2.00 per call for AB traffic.

With cost-based interconnection charges, the opening up of 50 percent of the customers to potential competition reduces monopoly power by 50 percent. This contrasts with the case of mutual compensation without control of rates in which the monopoly power was only reduced by 20 percent. The cost-based interconnection effectively eliminates the network externality and makes the telephone network similar to a standard market. The two "products" of service to A and service to B can be sold separately in accordance with their respective market conditions. The cost based interconnection effectively severs the tie between the products, and removes it from the context of network

externalities, vertical integration, or tightly complementary products.

The use of cost based interconnection also makes the monopoly power and actions of A very visible. In the preceeding case, the customers of A and B were charged the same price, leaving some potential doubt as to whether A was truly exerting its monopoly power. In this case, the customers of A are charged twice the rate of the customers of B even for the same physical call and therefore the monopoly actions of A are clear.

#### **IV. Fixed costs per subscriber**

Assume a fixed cost of \$2 per subscriber. That is, any company that chooses to serve a particular subscriber incurs a cost of \$2 even with no traffic, and incurs the same costs as above (\$.50 originating and \$.50 terminating) for each call carried. Fixed costs per subscriber have been a standard part of telecommunication history, and many of the existing universal service provisions are concerned with defraying the fixed costs per subscriber. In telephone language, the previous section assumes non traffic sensitive (NTS) costs are zero and this section assumes NTS costs are significant.

##### **A. No Required Interconnection**

With no required interconnection, a company choosing to serve the potentially competitive customers in set B can

only be certain of the BB traffic (the traffic among customers of B). A separate network to serve only BB calls at a price of \$1 per call as in the previous section is no longer viable because of the fixed cost per subscriber. A company desiring to serve only BB traffic must charge enough to pay the fixed cost of \$2 per subscriber as well as the usage cost of \$1 per call. The only way to do that with linear pricing is to charge the BB customers the monopoly usage price of \$2 per call, yielding a profit above usage costs of \$2 per person which is just enough to cover the fixed cost of serving the person. That provides no advantage to customers of BB compared to accepting service from the monopoly and therefore the separate network for BB customers alone is not feasible.

So long as interconnection is not required and the monopolist of A recognizes that service to BB alone is not viable, the monopolist of A will refuse connections. That allows A to monopolize the entire market. A's ability to extend its monopoly power from AA and AB traffic to include BA traffic in the case of no fixed costs now allows A to extend its market power to BB traffic as well.

Alternatively, A can accomplish the same thing as refusing to interconnect by setting a high fee for interconnection. If A charges \$1.50 for traffic terminating on its network, customers of B are indifferent between taking service from A or from B and A makes a profit of \$1 per call either directly from the customer or from the

interconnection fees charged to B. The difference from the previous case is that A can now also make a profit of \$1 per call from BB calls because it is infeasible to pay the additional fixed cost of having a separate network only for BB calls. The combination of fixed costs and no interconnection requirements means that the potential competition for half of the customers does not reduce total monopoly power at all. The customers pay full monopoly prices for all calls, just as if there were no possibility of entry for any customers. Total potential monopoly profits are less in this case than before because of the fixed cost per subscriber. The potential monopoly profits of \$30 in the previous case are reduced by \$12 (fixed cost of \$2 per subscriber times 6 subscribers) to \$18. However, the monopolist of A now makes 100 percent of the potential monopoly profits rather than 80 percent as in the previous case.

**B. Required interconnection with mutual compensation**

A will demand a high rate (above \$1.50 per call) as a termination fee for any traffic received from B and will agree to pay the same rate for any traffic sent to a company serving B. However, A will also establish an affiliate in B and will send as much traffic as possible to its own affiliate. As in the case of no fixed cost, this transfers profit from the monopolist of A to A's affiliate serving B customers, but it does not reduce prices for customers or reduce total monopoly power. Because of the fixed costs per

subscriber, no company independent of the monopolist of A will find it profitable to serve any part of the B market. The interconnection fee established by A makes it unprofitable to serve B customers without return traffic, and unaffiliated companies serving B cannot be certain of the amount of return traffic they will receive. The fact that unaffiliated companies see the interconnection fee as a real cost while the affiliated company only sees it as a transfer payment among parts of the company allows A to manipulate the fee to disadvantage its competitors. Thus even with half of the market open to competition and required interconnection with mutual compensation, A can monopolize the entire market by controlling the level of the interconnection fee.

As in the case of no fixed costs, the key issue in this case is that A is able to establish an affiliate to serve B, but competitors in B are not able to establish an affiliate to serve A. Consequently, A and its affiliate can pay any necessary fee to each other and recognize the profit in whichever place is convenient. So long as A can establish an affiliate in B, there is no difference between the case of required interconnection with mutual compensation and the case of no required interconnection. In both cases, the monopolist of A can entirely monopolize the market.

#### **C. Mutual Compensation at Cost**

With cost-based mutual compensation, the monopolist of A is no longer able to extend its monopoly power into the B

market. As in the case of no fixed cost, cost-based mutual compensation allows the customers of BB and BA to enjoy competitive prices. The monopolist of A cannot artificially raise the price of BB or BA traffic by setting a high mutual compensation rate and transferring profits to an affiliate. Cost-based mutual compensation achieves the theoretical ideal of restricting monopoly power to the set of customers for which there are no alternatives and preventing the extension of monopoly power to potentially competitive markets through manipulation of interconnection compensation. With cost-based mutual interconnection, the opportunity for competition among half of the customers reduces total monopoly power in half. That contrasts with the case of mutual compensation without restrictions on the rate charged in which the opportunity for competition among half of the customers did not reduce monopoly power at all.

#### **V. Practical Considerations in Designing an Interconnection Policy**

Both existing policy toward international settlement rates and theoretical analysis support the goal of cost based compensation rates for jointly provided services. In the above examples, cost was a simple constant rate per minute. Unfortunately, the real world is not so simple and the actual definition and measurement of cost require care. For example, most telecommunication equipment is engineered for peak period usage. Because most of the cost of service

24

is related to the capacity of the plant rather than the actual number of minutes used, the true cost for peak period usage is much greater than the cost for off peak usage. The cost of carrying off-peak traffic may be very near zero. Any interconnection policy should provide feasible administrative and measurement mechanisms and should provide maximum freedom for innovations in service and pricing. Two practical approaches to the general principle of cost based mutual compensation should be considered.

A. Sender keep all

A particularly simple approach to mutual compensation is sender keep all. Under this arrangement, each company is obligated to terminate traffic for other companies and is entitled to have its traffic terminated by other companies. Each company bills its customers for its originating traffic and pays no compensation to any other company for terminating service.

Sender keep all is mutual compensation with the price of terminating service set at zero. It is economically efficient so long as the real cost of providing terminating service is low. The incentives for manipulation are reversed in this case compared to the previous cases of above-cost terminating rates. Under sender keep all, each company has an incentive to increase the efficiency of its operations in order to reduce its costs and to maximize its outgoing traffic relative to its incoming traffic because outgoing traffic is the most profitable.

Although sender keep all departs from the theoretical goal of cost based compensation by setting a below cost price for terminating service, there is less opportunity for manipulation than with the price of terminating service above cost. If traffic is balanced, the price is irrelevant. Decreasing the incentives for traffic manipulation will tend to increase the balance of the traffic and reduce the significance of the difference between cost and the zero compensation rate. With mutual compensation rates above cost, the monopolist has an incentive to send as much traffic as possible to its own affiliate and as little traffic as possible to the competitors of its affiliate. With sender keep all, the monopolist has no incentive to send traffic to an affiliate. The monopolist does have an incentive to refuse to accept terminating traffic, but the interconnection requirement implies an obligation to terminate any traffic that is presented.

#### **B. Peak Usage Measurement**

The recent NYNEX-Teleport interconnection arrangement provides an example of a combination of usage charges and sender keep all arrangements. The general form of the agreement is to establish a particular charge for a two-way channel of given capacity between the two companies. Traffic is measured at the busy hour each month and the relative measurements are used as an allocation factor for the established channel rate. If traffic is exactly

Although sender keep all departs from the theoretical goal of cost based compensation by setting a below cost price for terminating service, there is less opportunity for manipulation than with the price of terminating service above cost. If traffic is balanced, the price is irrelevant. Decreasing the incentives for traffic manipulation will tend to increase the balance of the traffic and reduce the significance of the difference between cost and the zero compensation rate. With mutual compensation rates above cost, the monopolist has an incentive to send as much traffic as possible to its own affiliate and as little traffic as possible to the competitors of its affiliate. With sender keep all, the monopolist has no incentive to send traffic to an affiliate. The monopolist does have an incentive to refuse to accept terminating traffic, but the interconnection requirement implies an obligation to terminate any traffic that is presented.

### **B. Peak Usage Measurement**

The recent NYNEX-Teleport interconnection arrangement provides an example of a combination of usage charges and sender keep all arrangements. The general form of the agreement is to establish a particular charge for a two-way channel of given capacity between the two companies. Traffic is measured at the busy hour each month and the relative measurements are used as an allocation factor for the established channel rate. If traffic is exactly

balanced, the payments to each company cancel out and the level of the established rate is irrelevant. If traffic is not balanced, and if Teleport, for example, sends more traffic to NYNEX than it receives from NYNEX at the busy hour, that imbalance is used to compute a net payment from Teleport to NYNEX.

The agreement is essentially a sender keep all arrangement for non-peak traffic. Because relative traffic is only measured at the peak hour, either company can increase its traffic to the other at non-peak times without affecting the charges due. For peak traffic, the agreement is essentially a per minute compensation scheme. An increase in peak period traffic from NYNEX to Teleport, for example, without a corresponding increase in the other direction, changes the financial flows between the companies in the same way that a per minute charge for peak terminating traffic would do.

The distinction between peak and off-peak traffic is beneficial for administrative simplicity and for economic efficiency. Costs are generally associated with peak traffic and therefore the effectively zero charge for terminating off-peak traffic is cost based.

While the structure of the NYNEX-Teleport agreement is beneficial for equating termination charges to cost during the off-peak period, it does not in itself solve the problem of increasing market power through high charges discussed in the previous sections. If the established price for a

channel of given capacity is set far above cost, then the company with market power could engage in the same kind of manipulation discussed above. For example, with a very high priced channel, NYNEX could choose to not terminate traffic through Teleport during the peak hour while Teleport would have little choice but to terminate traffic through NYNEX. That could cause Teleport to pay rates for termination that were high enough to reduce the benefits of competition.

If the established price for a channel of given capacity is near the real cost, then the NYNEX-Teleport arrangement provides an attractive model for general interconnection issues. It would approach a cost-based interconnection fee for both peak and off peak traffic, leading to economic efficiency and opportunities for pricing innovations.

## VI. Conclusion

When the market is composed of segments that are monopolized and segments subject to competition, interconnection and compensation arrangements are critical to the development of effective competition. A good interconnection policy will allow effective competition in the potentially competitive segments of the market while a poor interconnection policy will allow the monopolist of part of the market to extend its monopoly into potentially competitive sectors of the market. This paper has shown that the theoretically correct policy is mutual compensation

at cost based rates and that mutual compensation alone is insufficient to limit monopoly power. A desirable interconnection policy should be closely related to the theoretically correct policy and also take account of the practical problems of administrative feasibility and of the definition and measurement of cost.

Several specific conclusions can be drawn from the analysis of this paper:

- (1) If there are no regulatory controls on compensation for interconnection, the monopolist of part of the market can extend its monopoly power to the entire market;
- (2) A mutual compensation policy without limits on the level of rates does not limit market power;
- (3) The level of rates under a mutual compensation policy is unimportant if and only if the level of incoming and outgoing traffic is exactly balanced. Because traffic levels will rarely, if ever, be exactly balanced, the level of rates will be an important factor in the viability of competition;
- (4) A mutual compensation policy with prices limited to the cost of service is the theoretically correct compensation policy. Mutual compensation with prices limited to the cost of service prevents the monopolist of part of the market from extending its market power to potentially competitive sectors of the market.

(5) Capacity charges rather than per minute charges allow attention to be focused on the cost of service at the peak load which is generally the real cost of service;

(6) "Sender keep all" is an administratively simple mutual compensation scheme with zero prices for terminating service. It is an attractive approximation to the theoretically correct policy of cost based prices when the incremental cost of terminating service is low.

## APPENDIX

### Brief Summary of Past Interconnection Compensation Efforts

Interconnection issues have played a crucial role in competitive viability and in pricing policy throughout the history of the telecommunication industry. Interconnection disputes began with the early efforts to expand market power in the telegraph industry through limits on interconnection rights and continued through the Bell companies' early twentieth century denial of interconnection to independent telephone companies, the development of legal rights to interconnection, the private line and CPE interconnection controversies of the 1970's, and the development and implementation of the access charge system during the 1980's.

The 1980 Computer II decision to remove CPE from Title II regulation included the decision to eliminate the support flows that had previously gone from CPE to other parts of the industry. Customers gained the right to interconnect any amount of CPE (so long as it met specified technical standards) to the public network with no specific interconnection charge. Customers still had to pay the tariffed local rates for service, but CPE was "carved off" from the public network. That decision was made in the context of a monopoly public network and a potentially competitive CPE component. Without the interconnection requirements, the monopoly local network provider could also

monopolize the CPE, but with the requirements, the CPE market could develop in a competitive way independently of the actions of the monopoly local network providers.

It would have been possible to apply the CPE model to long distance interconnection (allowing the competitors to interconnect at ordinary local rates as MCI originally requested in its Execunet service), but that would have eliminated the established system of revenue flows from long distance to local service. The decision first to allow AT&T to impose the ENFIA tariff rather than local rates for long distance interconnection, and then the development of the access charge system, implied a desire to maintain the system of revenue flows from long distance to local service. The access charge system together with the MFJ restrictions on BOC participation in long distance service allowed the long distance market to develop competitively without interference from the local exchange companies, but did not force prices to the true cost of service as normally happens in a competitive market.

Both the CPE and long distance controversies occurred in a market structure in which one party (the local exchange) was assumed to have monopoly power and the other party (the CPE user or long distance provider) was assumed to operate in a competitive market. Thus the policy concern was to ensure that the competitor could receive access to the monopolized market at an appropriate price. The international model provides a more equal example in which

both parties are assumed to have market power. So long as AT&T was the only U.S. carrier for international telephone traffic, it could bargain over the compensation scheme with monopoly entities in foreign countries on an equal basis. However, the beginning of competition in the U.S. for international calls increased the bargaining power of the foreign carriers. The foreign carrier was no longer restricted to dealing with AT&T for U.S. traffic but could agree to send traffic to the U.S. carrier that offered the foreign monopoly carrier the most favorable terms. This possibility created considerable concern at the FCC over whether the beginning of international competition in the U.S. would only benefit foreign carriers and not U.S. customers. Evan Kwerel's 1984 analysis of the international market concluded:

This paper raises serious questions about the wisdom of deregulating U.S. international telecommunications without considering whether this will increase the market power of foreign telecommunications authorities. Increased competition among U.S. suppliers of international telecommunications services is likely to result in a reduction in the U.S.'s share of the benefits from such services unless the U.S. government takes appropriate countermeasures.<sup>6</sup>

The concerns raised in Kwerel's 1984 paper later developed into extensive FCC efforts to prevent monopoly foreign carriers from taking advantage of their unequal bargaining position with competitive U.S. carriers. The

<sup>6</sup> Evan Kwerel, "Promoting Competition Piecemeal in International Telecommunications," FCC, OPP Working Paper 13 (December 1984), p. 49.

Commission found that equal payment in each direction was inadequate protection against manipulation for a monopolist of one side and sought to bring the rates paid for international terminating service down to the level of cost.

Vita  
**GERALD W. BROCK**

**OFFICE**

Telecommunication Program  
George Washington University  
312 20th Street, N.W.  
Washington, D.C. 20052  
Phone: (202) 994-1989  
Fax: (202) 994-0022

**EDUCATION**

B.A. (magna cum laude) Harvard University 1970  
applied mathematics

Ph.D. Harvard University 1973, economics with  
specialization in industrial organization  
thesis advisor: Richard Caves

**EXPERIENCE**

1994-present: Director, Graduate Telecommunication  
Program, George Washington University, responsible for  
supervising interdisciplinary M.A. program in  
telecommunication.

1990-present: Professor of Telecommunication,  
George Washington University; responsible for  
teaching graduate courses in telecommunication,  
advising students, and conducting research.

1987-1989: Chief, Common Carrier Bureau, Federal  
Communications Commission; responsible directly to the  
Chairman and Commissioners for all aspects of common  
carrier regulation, including tariffs, accounting,  
licensing, and new policy initiatives; issued final  
orders on delegated authority or prepared recommended  
orders for Commission vote; supervised staff of 100  
economists, engineers, attorneys, accountants, and  
other professional and support personnel; member of the  
career Senior Executive Service, level 5.

1986-1987: Chief, Accounting and Audits Division,  
Common Carrier Bureau, FCC; responsible to the Bureau  
Chief for the administration of accounting and  
separations rules, the development of cost allocation  
methodologies, and the auditing of telephone company  
compliance with FCC financial rules; supervised staff  
of 65 economists, accountants, auditors, and support  
personnel; promoted into the career Senior Executive  
Service in December 1986.

1980-1986: Economist, Office of Plans and Policy, FCC; responsible for economic research and policy analysis for major FCC initiatives, rank of GM-15.

1979-1981: Economic consultant; major projects included work for the Department of Justice in the suit that led to the divestiture of AT&T, work for the Federal Trade Commission in its program to evaluate the effects of past antitrust enforcement, and work on a private antitrust suit.

1978-1979: Associate Professor and Department Chairman, Economics Department, Bethel College, St. Paul, Minnesota; responsible for teaching undergraduate economics courses and revising the economics curriculum.

1973-1978: Assistant Professor, Economics Department, University of Arizona; taught undergraduate and graduate courses in economic theory and industrial organization, conducted economic research, advised students, and participated as a consultant and expert witness in computer industry antitrust litigation.

## **PUBLICATIONS**

### **Books**

The U.S. Computer Industry: A Study of Market Power (Ballinger Publishing Company, 1975)

The Telecommunications Industry: The Dynamics of Market Structure (Harvard University Press, 1981)

Telecommunication Policy for the Information Age: From Monopoly to Competition (Harvard University Press, 1994)

### **Book Portions**

"Competition, Standards and Self-Regulation in the Computer Industry," in Caves and Roberts, eds. Regulating the Product: Quality and Variety (Ballinger Publishing Company, 1975)

"The Regulatory Change in Telecommunications: the Dissolution of AT&T," in Weiss and Klass, eds. Regulatory Reform: What Actually Happened (Little, Brown, 1986)

"Dominant Firm Response to Competitive Challenge: Peripheral Equipment Manufacturers' Suits Against IBM

(1979-1983)," in Kwoka and White, eds. The Antitrust Revolution (Scott, Foresman, 1989)

"The Computer Industry," in Walter Adams, ed., Case Studies in American Industry (MacMillan, 1989)

"Dynamic Market Structure and Technical Innovation," in Baughcum and Faulhaber, eds. Telecommunications Access and Public Policy (Ablex Publishing, 1984)

"Universal Service with Extensive Competition," in James Miller, ed. Telecommunications and Equity: Policy Research Issues (North-Holland, 1986)

"Comment on Productivity Studies," in Barry G. Cole, ed. After the Break-up: Assessing the New Post-AT&T Divestiture Era (Columbia University Press, 1991)

"Institutional and Procedural Effects on the Development of United States Telecommunication Policy," in Stevenson, Oum, and Oniki, eds. International Review of Comparative Public Policy, Vol. 5 (Greenwich, Conn.: JAI Press, Inc., 1993).

#### Government Reports

"Industrial Cases" in Impact Evaluations of Federal Trade Commission Vertical Restraints Cases (Federal Trade Commission, 1984)

"Bypass of the Local Exchange: A Quantitative Assessment" (Office of Plans and Policy, Federal Communications Commission, 1984)

"Telephone Pricing to Promote Universal Service and Economic Freedom" (Office of Plans and Policy, Federal Communications Commission, 1985)

"The Economic Efficiency Benefits of the Current Subscriber Line Charge" (Office of Plans and Policy,

**COX ENTERPRISES, INC.**  
**RESPONSES TO LEC ARGUMENT AGAINST "BILL AND KEEP"**

**Argument:** "Bill and keep" arrangements are based on the erroneous assumption that the costs of terminating traffic are the same as the costs of originating it, when in fact the costs of terminating traffic are higher.

**Response:** The LECs have not produced any cost data to prove this assertion, and if anything, the opposite is true -- originating traffic is more expensive than terminating it at the last switch of the connecting network. This argument seems to be based on the erroneous assumption that the terminating carrier will route the call through most of its network, and the originating carrier will transfer the call to the terminating carrier at the tandem (or higher). However, Cox is asking only that "bill and keep" be used for traffic terminated at the end office, where the cost of termination is de minimis (on average, about \$.002 per minute).

**Argument:** "Bill and keep" mistakenly assumes that the costs of termination are equal between networks and that traffic flows between networks will be in balance, thus causing the costs and charges between carriers to cancel each other out.

**Response:** Studies using the LECs' own data demonstrate that the average costs of terminating traffic on incumbents' networks are de minimis. It thus would not matter should the costs of terminating traffic on a new entrant's network turn out to be smaller. Moreover, from a theoretical perspective, prices in a purely competitive market would be uniform and would be set by supply and demand, not by an individual supplier's costs. Therefore, the price for interconnection should not vary simply because one supplier is less efficient than another. The LECs themselves have long argued for regulation in which prices are de-coupled from costs. Their insistence that differences in termination costs among networks should be reflected in rates for terminating traffic is a throwback to 1960s-style rate-of-return regulation.

The fact that the average incremental cost of terminating traffic is so tiny also makes it irrelevant that traffic flows might be imbalanced at the outset of competition. "Bill and keep" is an efficient economic solution where either: (1) traffic flows are roughly balanced or (2) the cost of terminating traffic is low in relation to the transaction costs of measuring and charging for traffic. With termination costs averaging \$.002 per minute, it would be cheaper to use "bill and keep" than it would be to develop methods of counting and billing for traffic.

Finally, "bill and keep" eliminates inefficient marketplace incentives. The higher the interconnection charge, the more competitive carriers will be forced to distort their marketing in the direction of customers (such as Pizza Hut) who make very few calls and who receive many calls. This will occur because competitive carriers will derive greater

profit from terminating calls than from originating them. "Bill and keep" prevents this market distortion from occurring.

**Argument:** "Bill and keep" ignores the type and scope of facilities required to terminate calls and the resulting costs of providing the service. Incumbents should not bear the entire cost of maintaining the ubiquitous network, which would happen under "bill and keep."

**Response:** Since "bill and keep" would be used for calls terminated at the incumbent LEC's end office, a competitive carrier would use only a small portion of the incumbent's network. The incremental costs of such interconnection are minuscule and are outweighed by the costs of measuring and charging for traffic. Moreover, incumbent LECs would be compensated at cost for calls terminated at the tandem. Accordingly, the argument that "bill and keep" will impose a serious cost burden on incumbent LECs is simply erroneous.

Moreover, the LECs already are recovering the costs of the "ubiquitous network" through existing rate structures. To the extent that incumbents really are arguing that they should be allowed to charge above-cost interconnection rates in order to stave off (or be "compensated for") losses caused by competition, that argument directly contravenes the public interest. Policymakers across the country agree that competition in the local loop benefits consumers. Allowing incumbent LECs to add a surcharge to termination charges could suffocate, and would certainly be counterproductive to, competition in the local loop.

In addition, federal and state regulators already are easing regulation of monopoly LECs to ease their adjustment to a competitive environment. For example, the FCC just adopted a notice proposing relaxation of its price cap regime to help incumbent LECs better respond to competition. Many states are moving from cost-of-service to price cap regulation, and some states are even granting price flexibility before demonstrable competition exists. These proceedings are the proper place to address LEC arguments about the "harms" introduced by competition.

**Argument:** Universal service will be seriously undermined by the introduction of competition into the local loop. Interconnection charges for terminating traffic thus should include a surcharge to prevent erosion of universal service.

**Response:** Consumers with limited incomes should have access to reasonably priced basic local exchange service, as should those who live in high-cost areas. The development of competition will spur all LECs to lower costs and expand their customer base, thereby reducing the need for universal service assistance to such subscribers over time. In the interim, however, the way to ensure that universal service continues is to address the need for, and establishment of, a universal service fund in a separate proceeding -- not to include a universal service surcharge in LEC rates for terminating traffic.

**Argument:** "Bill and keep" will irreparably injure incumbent LECs by causing "dumping", in which a competitive carrier sends all of its traffic to the incumbent for termination as "local calling," even though the traffic includes large volumes of calls that are not local. Specifically, competing LECs could lure IXCs (and their access revenue) away from incumbents LECs by reselling the free termination service received from the incumbent to the IXCs or offering them discounted access rates.

**Response:** Assuming this scenario were to occur, consumers would benefit because the reduced access charges would result in lower long distance rates. However, should regulators become concerned that lower access rates are having an adverse effect on the provision of local exchange service, that issue should be addressed through universal service or access charge reform, not through the imposition of an unrelated and anticompetitive surcharge in the rates for terminating traffic on the local exchange.

**Argument:** Because it allows competitors to use incumbent LECs' networks without compensation, "bill and keep" is an unconstitutional taking that violates incumbents' Fifth Amendment rights.

**Response:** Courts can be expected to consider three factors in assessing whether a government-imposed "bill and keep" arrangement for traffic terminated at the end office constitutes a regulatory taking: (1) the economic impact of the regulation, (2) interference with investment-backed expectations, and (3) the character of the governmental action. The third element refers to whether there has been a physical taking -- i.e., a physical invasion of LEC property -- which is not at issue here. The first factor, the economic impact of the regulation, generally requires that the property be rendered worthless, or virtually worthless, as a result of the government's action. Should "bill and keep" be adopted, however, the LECs can continue to provide all of the services they currently provide and their termination of traffic for interconnecting LECs will have no effect on other uses of their facilities. Incumbent LECs also will receive the further economic benefit of being able to terminate their traffic on competing networks at no cost. As for the second element, interference with investment-backed expectations, the courts are clear that the mere loss of anticipated profits does not constitute a taking. Accordingly, "bill and keep" would not deprive the incumbent LECs of their property in violation of the Fifth Amendment under the relevant caselaw.

Moreover, as a practical matter, studies using the LECs' own data reveal that the transaction costs of measuring and charging for terminating traffic at the end office are probably higher than the de minimis cost of terminating the traffic. Thus, using "bill and keep" for end office traffic termination is fair to incumbent LECs and produces an economically efficient result.

**Argument:** "Bill and keep" would require revision of incumbent billing systems which are already in place to handle access charges. There is a high likelihood that new entrants will hand off local traffic to the incumbent to be terminated in a third carrier's territory.

"Bill and keep" cannot work under this scenario because the middle carrier would not be in a position to bill the end user placing a call, and would end up performing a service without any form of compensation.

**Response:** This argument again assumes that "bill and keep" would be applied for all types of interconnection, when in fact Cox is asking that it be adopted for terminations that occur at the end office. In the scenario posited by the LECs, the middle carrier would be compensated by the originating carrier for the transport services it supplied.